$\begin{array}{ll} \text{CLASSIFICATION} & \underline{\mathbb{C}} + \underline{\mathbb{C}} \\ \end{array}$

CENTRAL INTELLIGENCE AGENCY INFORMATION FROM FOREIGN DOCUMENTS OR RADIO BROADCASTS

| REPORT | |
|--------|--|
| | |

COUNTRY SUBJECT

USSR

DATE OF

CD NO.

INFORMATION

Scientific - Chemistry, organositicon compounds

DATE DIST.

HOW

PUBLISHED

Monthly periodicals, book

PUBLISHED

LANGUAGE

DATE

NO. OF PAGES

PUBLISHED 1953

SUPPLEMENT TO

REPORT

INE UNITED STATES, MITHIM THEMEANING OF TITLE 16. SECTIONS 36

ND 784, OF THE U.S. CODE, AS AMENDED. LTS TRANSMISSION OR REVE

ATION OF ITS CONTENTS TO OR RECEIPT BY AN UNAUTHORIZED PERSON I

Moscow

Russian

THIS IS UNEVALUATED INFORMATION

50X1-HUM

50X1-HUM

SOURCE

As indicated

TRENDS IN USSR WORK ON ORGANOSILICON COMPOUNDS

[Numbers in parentheses refer to appended sources.]

Some trends in USSR work on organosilicon compounds, which have a bearing on the application of this class of compounds for protective coatings, have already been discussed in a previous report (see 00-W-30927), where the increased emphasis placed by USSR investigators on the synthesis and applications of silicohydrocarbons was noted. The advantages of silicohydrocarbons as compared with siloxanes have been pointed out in several USSR reviews dealing with organosilicon compounds. (1,2) According to A. D. Petrov and V. F. Mironov, who have reviewed Poreign and USSR work on the subject, extensive research is being done at present on the synthesis of organosilicon polymers in which the siloxane groups have been replaced partially or completely with disilanemethylene groups. The purpose of this research is to eliminate the following unsatisfactory characteristics of polysiloxanes: the inadequate oiliness of siloxane liquids, the unsatisfactory adhesion of siloxane coatings to metals, the inadequate mechanical strength or silicone ruppers, and the tendency of biloxane conds to undergo rearrangements on heating. (1)

Petrov further states that dilicohydrocarbons, as distinguished from siloxanes, have not yet been applied practically on an extensive scale, although substantiel progress has been achieved in investigations on their synthesis. (3) In outlining e) tensive work in this field done by himself and members of his group, Fetrov implies that he was responsible for a considerable amount of this progress. (1) According to Petrov, there can hardly be any doubt that copolymerization of vinyl compounds, such as outadiene, styrene, etc., with silanes containing unsaturated redicals will yield polymers having vertueble technical properties. He further contends that heat transfer agents which have a setter thermal stability than the Southerns will be found in the course of research on siliconydrocarbons. (3)

50X1-HUM

- 1 -

CLASSIFICATION C-O-N-F-I-D-E-N-T-T-A-1

| STATE | NAVY | NSRB | DISTRIBUTION | | |
|-------|------|------|--------------|-------------|-------------|
| ARMY | AIR | FBI | | | |

Γ

50X1-HUM

$\underline{C} - \underline{O} - \underline{N} - \underline{F} - \underline{I} - \underline{D} - \underline{B} - \underline{B} - \underline{H} - \underline{I} - \underline{A} - \underline{L}$

M. G. Voronkov also states that organosilicon compounds can be used as heat transfer agents and describes the properties of tetrabenzylsilane, which can be distilled at a temperature above 550°C without decomposition. He further mentions the technical use of long-chain silicohydrocarbons in which the silicon atoms alternate with carbon atoms. (2) In discussing, on the basis of his work, silicohydrocarbons which have a molecular weight corresponding to that of petroleum lubricating oil fractions, Petrov states that the silicohydrocarbons in question have considerably lower congelation points than the corresponding hydrocarbons and that their specific weight is somewhat higher, while the indices of viscosity are practically the same as those of the hydrocarbons. Petrov further describes, on the basis of his own work, a series of liquid silanes which contain one or two naphthyl groups. He says that these silanes congeal into glasses within the range of minus 40°C to plus 40°C, and distill without the slightest decomposition between 350° and 400°C.

In discussing the synthesis of silicones and silicohydrocarbons, Petrov mentions the facility with which compounds of this type can be synthesized with the use of magnesium-organic compounds. He makes the suggestion that in view of the wide introduction of the Grignard synthesis into industrial practice for the synthesis of silicones, use be made of this synthesis to produce hydrocarbons that will serve as components of diesel fuels and of lubricating oils. According to Petrov, industrial Grignard syntheses of hydrocarbons can then be carried out at installations similar to those used for the production of silicones. (3)

SOURCES

- A. D. Petrov, V. F. Mironov, The Synthesis and Properties of Silicohydrocarbons, VUspekhi Khimii, Vol 22, No 4, 1953, pp 377-409
- M. G. Voronkov, The Chemistry of Organosilicon Compounds, Priroda, Vol 42, No 1, 1953, pp 41-52
- A. D. Petrov, Khimiya Motornykh Topliv (The Chemistry of Motor Fuels), Academy of Sciences USSR, Moscow, 1953, pp 439-450

- END - 50X1-HUM

- 2 -

 $\underline{C}-\underline{O}-\underline{N}-\underline{F}-\underline{I}-\underline{D}-\underline{E}-\underline{N}-\underline{T}-\underline{I}-\underline{A}-\underline{L}$

